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The *Platycerus* (Coleoptera, Lucanidae) of California, with the recognition of *Platycerus cribripennis* Van Dyke as a valid species

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Abstract

The status of *Platycerus cribripennis* Van Dyke, generally treated as a synonym of *P. marginalis* Casey, has been unclear. Here we recognize and redescribe *P. cribripennis*, which is endemic to the coastal mountains of California, as a valid species due to its unique morphology. A key to the *Platycerus* of California is presented, and the distributions of the recognized species are discussed.

Keywords

Systematics, Lucanidae, Platycerini, *Platycerus cribripennis*

Introduction

The North American Platycerini (Coleoptera: Lucanidae: Lucaninae) consists of four species in the Holarctic genus *Platycerus* Geoffroy (Maes 1992; Smith 2003). Benesh's (1946) treatment of *Platycerus* is the most recent revision of the genus in North America, and of the genera *Platyceroides* Benesh and *Platyceropsis* Benesh of the tribe Platyceroidini (Paulsen and Hawks 2008).

Two species, *Platycerus marginalis* Casey and *Platycerus oregonensis* Westwood, have been reported from California (Benesh 1946; Evans and Hogue 2006). The recent rediscovery of an unusual *Platycerus* in California prompted a reassessment of the species reported from the state. We take this opportunity to provide additional distributional information for the *Platycerus* species known from California.

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Prior to Benesh's revision of *Platycerus*, *P. marginalis* had been considered a western subspecies of the eastern and boreal *P. depressus* LeConte. Van Dyke (1928) described *P. depressus cribripennis* as an additional subspecies from three specimens from Monterey County, California. Van Dyke noted several differences, primarily in sculpturing, from other known forms of the species. He stated that its degree of difference nearly justified recognition as a separate species, but declined to take this action, citing variation exhibited by other lucanid species.

Benesh (1946) raised *P. marginalis* to specific status and synonymized Van Dyke's subspecies as an "apparent mutant", without seeing Van Dyke's type. Benesh suggested that this species "*merely represented a common occurrence in Lucanidae, whereby the males take on characteristics of females.*" Subsequently, Benesh (1960) presented *P. cribripennis* as a valid species in his catalog without further discussion. However, later authors (*e.g.*, Maes 1992) have perpetuated the synonymy with *P. marginalis*, making the status of *P. cribripennis* unclear. Most recently, Smith (2003) listed *P. cribripennis* as a synonym of *P. marginalis.*

Collections as part of the second author's California Beetle Project produced a small series of *Platycerus* specimens from the mountains around Santa Barbara that correspond well with Van Dyke's description of *Platycerus depressus cribripennis*. We have since examined other specimens of this alleged 'mutant', and believe it constitutes a valid species. The differences noted by Van Dyke, particularly the densely punctate, subrugose elytra with discal striae obliterated, in addition to other characters described below, hold with little variation among the few known populations of this species. We see evidence neither for Benesh's view that these are aberrant *P. marginalis*, nor for his specific suggestion that males of *P. cribripennis* exhibit characteristics of females. In fact, males of *P. cribripennis* possess well-armed mandibles for the genus, with an additional exterior tooth present on each mandible near the base. Benesh examined supposed specimens of *P. cribripennis* from Yosemite and Oregon. Both localities lie outside the apparent distribution of *P. cribripennis,* indicating that the specimens examined by Benesh were not *P. cribripennis.*

Materials and methods

As part of the first author's revisionary studies of New World Lucanidae, specimens of *P. cribripennis* were examined from the following collections: California Academy of Sciences, San Francisco, CA (CASC); David C. Carlson Collection, Fair Oaks, CA (DCCC); Essig Museum of Entomology, Berkeley, CA (EMEC); Field Museum of Natural History, Chicago, IL (FMNH); Santa Barbara Natural History Museum, Santa Barbara, CA (SBMN).

Results and discussion

Key to the *Platycerus* species of California

1 Elytra entirely, irregularly punctate (discal rows of punctures indistinct), surface between punctures raised (Fig. 3)..... ***P. cribripennis* Van Dyke**

– Elytra serially punctate, discal rows of punctures distinct, surface between punctures not raised.....**2**

2 Elytra generally with blue or green reflections, males with basal antennomere of club much shorter than distal antennomeres (Fig. 5) ....***P. oregonensis* Westwood**

– Elytra dark piceous in color without blue/green reflections, males with basal antennomere of club nearly as long as distal antennomeres (Fig. 4)..... ..... ***P. marginalis* Casey**

Redescription of *P. cribripennis* Van Dyke

***Platycerus cribripennis* Van Dyke, 1928: 107; New Status.**

Original combination: *Platycerus depressus cribripennis* Van Dyke, 1928: 107. Holotype male (CASC), labeled: a) "Tassajara. Cal. / Monterey Co. / V- 25 1920 / L. S. Slevin"; b) "on alder / log, chop'd / it up but / none in."; c) blue paper, "L.S. Slevin / Collection"; d) bordered white label with red highlighted "Holotype" at left margin and "[male symbol] / *Platycerus* / *depressus* / *cribripennis* / Van Dyke"; e) "California Academy / of Sciences / Type / No. "/ [handprinted] "2533"; f) "*Platycerus cribripennis* / Van Dyke, 1928 / det. MJ Paulsen 2008.

Description, male (n=7). Length: 12.7-14.7 mm. **Width at humerus:** 4.1-4.6 mm. **Color:** Black (Fig. 3). **Head:** Surface strongly alutaceous (microgranulate), irregularly punctate; puncture size variable from moderate to coarse; coarse punctures near eyes larger and more dense than in *P. oregonensis* or *P. marginalis*. Male majors with mandibles longer than head, upcurved, not evenly rounded externally; strong lateral tooth present on exterior near base; apex acute dorsally and ventrally blade-like with reduced dentition (multidentate in *P. marginalis*) and with dorsal subapical tooth small, obtuse. Male minors not seen. Antennal club with 4 tomentose antennomeres, basal antennomere of club (7th antennomere) nearly as long as antennomeres 8-10. Antennomere 6 also slightly produced internally. **Pronotum:** Surface strongly alutaceous, punctate; punctures irregularly spaced, moderate in size. **Elytra:** Surface alutaceous but more strongly shining than pronotum, densely punctate; punctures irregular (striae obscured, only sutural stria weakly evident); surface around punctures appearing raised,

subrugose. **Male Genitalia:** (Fig. 2). Basal part of median lobe rounded, distal portion produced into two lobes. Male internal sac permanently partially everted, unsclerotized; flagellum present, sclerotized (not membranous).

Description, female (n=1). Length: 13.6 mm. **Width at humerus:** 4.8 mm. **Differs from male as follows: Head:** Surface with punctation dense, punctures larger. Mandibles shorter than head, not upcurved, lacking external tooth, instead tridentate with acute apex, dorsal, and ventral teeth. Antennal club with 4 antennomeres, basal antennomere glabrous and much shorter than remaining antennomeres. **Female Genitalia:** not examined.

Figure 1. Known distribution of *Platycerus cribripennis* in California.
Figure 2. Male genitalia of *P. cribripennis,* with sclerotized flagellum on the everted internal sac.
Figure 3. Dorsal habitus, *P. cribripennis* male.
Figure 4. Dorsal habitus, *P. marginalis* male.
Figure 5. Dorsal habitus, *P. oregonensis* male.

Diagnosis. This species is distinguished from other Nearctic *Platycerus* by the following combination of characters: The black coloration and strongly alutaceous and/or opaque dorsal surface is distinctive; the densely punctate elytra with obsolete discal striae and subrugose surface between punctures will immediately distinguish this species. The oblique, external tooth at the base of the male mandibles is unique among Nearctic *Platycerus*. Additionally, the male mandibles have a blade-like apex, whereas the apex is multidentate in *P. marginalis, P. depressus,* and *P. virescens* (Fabricius) and simply dentate in *P. oregonensis*. The antennal club of male *P. cribripennis* has the basal club antennomere not reduced and nearly as long as the three distal antennomeres; in males of *P. oregonensis* and *P. virescens* the basal club antennomere is reduced.

Distribution (Fig. 1). *Platycerus cribripennis* is known only from California's coastal mountains. Benesh's assertion that other specimens were present from Yosemite and Oregon is certainly an error based on his failure to examine Van Dyke's type.

Specimens examined (8). CALIFORNIA: KERN (1): Bear Trap Canyon, Tejon Ranch (DCCC). MONTEREY (3): Jolon (FMNH); Tassajara Road, 1 mi S of China Camp (CASC, EMEC). SAN LUIS OBISPO (1): Morro Bay (EMEC). SANTA BARBARA (3): Cold Spring Canyon, Los Padres National Forest (SBMN, California Beetle Project database numbers CBP0048052, CBP0049001, and CBP0049002).

Remarks. *Platycerus cribripennis* is one of the most infrequently collected species of stag beetles in North America, being known from only a few specimens from five localities. There may be a need to examine the species' geographically limited distribution in greater detail to ascertain whether or not it warrants conservation status. This is especially true where the known distribution intersects planned or on-going development.

Annotated checklist of the Platycerini of California

LUCANIDAE
Lucaninae
Platycerini

Platycerus **Geoffroy, 1762: 62.** Holarctic.

Platycerus cribripennis **Van Dyke, 1928: 107.**
Figs 1-3.
USA: CA: Kern, Monterey, San Luis Obispo, Santa Barbara.

Platycerus marginalis **Casey, 1897: 639.**
Fig. 4.
USA: CA: Alpine, Amador, Butte, El Dorado, Glenn, Inyo, Lassen, Mariposa, Mono, Nevada, Placer, Plumas, Trinity, Tulare, Tuolumne, Shasta, Siskiyou. Also AZ, ID, NV, OR, UT, WA. Canada: BC.

***Platycerus oregonensis* Westwood, 1844: 106.**

Fig. 5.

USA: CA: Alameda, Contra Costa, El Dorado, Humboldt, Kern, Marin, Mariposa, Mendocino, Monterey, Napa, Nevada, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Sierra, Sonoma, Trinity, Tuolumne. Also OR; WA. Canada: BC.

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